

REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested.

I. STATUS OF THE CLAIMS

Claims 11-23 are amended herein.

Claim 18 is "objected to."

In view of the above, it is respectfully submitted that claims 11-24 are currently pending and under consideration.

II. OBJECTION TO CLAIM 18

In item 3, on page 2 of the Office Action, claim 18 is "objected to." The Examiner indicates that claim 18 recites "a light signal" in line 6 of the claim, and further suggests amending claim 18 to recite "an optical signal" to be consistent with the rest of the claim.

Claim 18 is amended herein.

In view of the above, it is respectfully submitted that the objection is overcome.

III. REJECTION OF CLAIM 19 UNDER 35 U.S.C. 112, FIRST PARAGRAPH

In items 5-6, on page 3 of the Office Action, claim 19 is rejected under 35 U.S.C. 112, first paragraph. The Examiner asserts that the Applicants' specification does not support an embodiment comprising two converging lenses and one lens covering the light receiving section and the light emitting section.

Claim 19 is amended herein.

In view of the above, it is respectfully submitted that the rejection is overcome.

IV. REJECTION OF CLAIMS 11 AND 12 UNDER 35 U.S.C. 102(B) AS BEING ANTICIPATED BY TAKEZAWA ET AL. (USP # 4,625,333)

The present invention as recited, for example, in claim 11 as amended herein, relates to an optical communication unit "a frame to house said light emitting section and said light receiving section," "a first converging lens attached to said frame, to converge the optical signal transmitted by said light emitting section and to transmit the converged optical signal to said

apparatus,” and “a second converging lens attached to said frame, to converge the optical signal transmitted by said apparatus and to transmit the converged optical signal to said light receiving section.”

Takezawa discloses a duplex or bi-directional optical communication device improved in its total light coupling efficiency.

The Examiner relies upon the teachings of Takezawa as disclosing an optical communication unit including a light emitting section, light receiving section, and a shielding section.

However, Takezawa does not disclose a frame, a first converging lens, and a second converging lens as recited in claim 11 (amended herein) of the present application. In the present application, the frame houses the light emitting section and the light receiving section. The first and second converging lenses are provided on the frame so that the light receiving section receives an optical signal from an apparatus as a communication partner, and the light emitting section transmits an optical signal to the apparatus. See Figs. 7 and 8 of Applicants' specification.

Thus, Takezawa does not disclose the features recited in claim 11 of the present application.

In view of the above, it is respectfully submitted that the rejection is overcome.

V. REJECTION OF CLAIMS 11 AND 12 UNDER 35 U.S.C. 102(B) AS BEING ANTICIPATED BY ABE ET AL. (USP # 5,875,047)

The comments in section IV, above, in regard to claim 11, also apply here.

Abe discloses an optical transceiver unit used for transmitting and/or receiving an optical signal.

The Examiner also relies upon the teachings of Abe as disclosing an optical communication unit including a light emitting section, light receiving section, and a shielding section.

However, Abe fails to disclose a frame, a first converging lens, and a second converging lens as recited in claim 11 (amended herein) of the present application. Therefore, Abe does not disclose the features recited in claim 11 of the present application.

Claim 12 depends from claim 11. Therefore, for at least the reasons that claim 11 distinguishes over the cited prior art, it is respectfully submitted that claim 12 also distinguishes over the cited prior art.

In view of the above, it is respectfully submitted that the rejection is overcome.

VI. REJECTION OF CLAIM 11 UNDER 35 U.S.C. 102(B) AS BEING ANTICIPATED BY WILMOTH (USP # 5,416,627)

The comments in section IV, above, in regard to claim 11, also apply here.

Wilmoth discloses a high speed, high data rate optical data link system for transmitting and receiving digital computer data, and the like, through free air as by an infrared light beam or other optical link.

The Examiner also relies upon the teachings of Wilmoth as disclosing an optical communication unit including a light emitting section, light receiving section, and a shielding section.

However, Wilmoth fails to disclose a frame, a first converging lens, and a second converging lens as recited in claim 11 (amended herein) of the present application. Therefore, Wilmoth does not disclose the features recited in claim 11 of the present application.

In view of the above, it is respectfully submitted that the rejection is overcome.

VII. REJECTION OF CLAIMS 11, 14, 15 AND 21 UNDER 35 U.S.C. 102(E) AS BEING ANTICIPATED BY OTA (USP #5,959,752)

The comments in section IV, above, in regard to claim 11, also apply here.

Ota discloses an optical transceiver usable for both of optical fiber transmission and free space transmission.

The Examiner relies upon the teachings of Ota as disclosing an optical communication unit including a light emitting section, light receiving section, and a shielding section.

However, Ota does not disclose a frame, a first converging lens, and a second converging lens as recited in claim 11 (amended herein) of the present application. Therefore, Ota does not disclose the features recited in claim 11 of the present application.

Similar to claim 11, independent claim 14 recites "a frame to house...said signal transmitting/receiving section," and therefore distinguishes over the cited prior art. Claim 14

(amended herein) also recites that the frame includes "at least one window to pass the optical signal from said one of said apparatuses to said light receiving section, and to pass the optical signal from said light emitting section to said one of said apparatuses," which distinguishes over the cited prior art. See Figs. 7 and 8 of Applicant's specification.

Claims 15 and 21 depend from claim 14. Therefore, for at least the reasons that claim 14 distinguishes over the cited prior art, it is respectfully submitted that claims 15 and 21 also distinguish over the cited prior art.

In view of the above, it is respectfully submitted that the rejection is overcome.

VIII. REJECTION OF CLAIMS 13-20, 22 AND 23 UNDER 35 U.S.C. 103(A) AS BEING UNPATENTABLE OVER THE COMBINATIONS OF TAKEZAWA, ABE, WILMOTH, OTA, STRECK, TSUJI, HELOT, AND KOBAYASHI

The comments, above, in regard to claims 11 and 14, also apply here in regard to the rejection of claims 13-20, 22, and 23 of the present application. Moreover, claim 13 and claims 15-20, 22 and 23 depend from claims 11 and 14, respectively. Therefore, for at least the reasons that claims 11 and 14 distinguish over the cited prior art, it is respectfully submitted that claims 13, 15-20, 22, and 23 also distinguish over the cited prior art.

In view of the above, it is respectfully submitted that the rejection of claims 13-20, 22, and 23 are overcome.

IX. NEW CLAIM

New claim 24 recites an optical communication unit comprising "a frame to house the light transceiver section," "a first converging lens attached to the frame, to converge the optical signal transmitted by the light transceiver section and to transmit the converged optical signal to the apparatus," and "a second converging lens attached to the frame, to converge the optical signal transmitted by the apparatus and to transmit the converged optical signal to the light transceiver section," and therefore distinguishes over the cited prior art.

In view of the above, it is respectfully submitted that claim 24 patentably distinguishes over the cited prior art.

X. CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that each of the claims patentably distinguishes over the prior art, and therefore defines allowable subject

matter. A prompt and favorable reconsideration of the rejection along with an indication of allowability of all pending claims are therefore respectfully requested.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: December 11, 2002

By: Derrick L. Fields
Derrick L. Fields
Registration No. 50,133

700 Eleventh Street, NW, Suite 500
Washington, D.C. 20001
(202) 434-1500

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please AMEND the claims in accordance with the following:

11. (ONCE AMENDED) An optical communication unit provided in an apparatus for executing communication with a communicating partner by using optical signals, the optical communication unit comprising:

a light emitting section [for transmitting] to transmit an optical signal to [an apparatus as a communicating partner] said apparatus;

a light receiving section [for receiving] to receive an optical signal from said apparatus [as a communicating partner]; [and]

a frame to house said light emitting section and said light receiving section;

a first converging lens attached to said frame, to converge the optical signal transmitted by said light emitting section and to transmit the converged optical signal to said apparatus;

a second converging lens attached to said frame, to converge the optical signal transmitted by said apparatus and to transmit the converged optical signal to said light receiving section; and

a shielding section [for preventing incidence of an optical signal from said light emitting section to said light receiving section] to optically shield light between said first converging lens and said second converging lens.

12. (ONCE AMENDED) An optical communication unit according to claim 11, further comprising:

a connecting section with an optical cable unit, wherein said optical communication unit [transmitting and receiving] transmits and receives optical signals to and from said apparatus [as a communicating partner] via said optical cable unit.

13. (ONCE AMENDED) An optical communication unit according to claim 11, further comprising:

an optical filter [for cutting] to cut off a visual light on a light path [to said light emitting section as well as to said light receiving section] of the optical signal from said apparatus to said light receiving section, and the optical signal from said light emitting section to said apparatus.

14. (ONCE AMENDED) An optical communication unit provided between [apparatuses each executing optical communication and transferring an optical signal] two apparatuses that perform optical communication with each other, the optical communication unit transmitting and receiving optical signals from and to said apparatuses, the optical communication unit comprising:

a connector connected to any one of said apparatuses;

a signal transmitting/receiving section [comprising a connecting section provided at the edge of said optical cable for connection to said apparatuses,] including a light receiving section [for receiving] to receive an optical signal from said one of said apparatuses, and a light emitting section [for transmitting the optical signal transmitted via said optical cable] to transmit an optical signal to said one of said apparatuses[.];

an optical cable to transmit the optical signal to and from said light receiving section and said light emitting section; and

a frame to house one end of said optical cable and said signal transmitting/receiving section, and including at least one window to pass the optical signal from said one of said apparatuses to said light receiving section, and to pass the optical signal from said light emitting section to said one of said apparatuses.

15. (ONCE AMENDED) An optical communication unit according to claim 14[.], wherein said optical cable has a pair of paths [for transferring] to transmit and receive optical signals [in different directions] from and to said one of said apparatuses, respectively.

16. (ONCE AMENDED) An optical communication unit according to claim 15[.], further comprising:

a shielding section [for preventing] to prevent incidence of an optical signal from said light emitting section to said light receiving section.

17. (ONCE AMENDED) An optical communication unit according to claim 14[.]; wherein said light receiving section comprises], further comprising:

a first converging lens [for converging] to converge an optical signal from said [apparatus] one of said apparatuses and [sending] transmit the optical signal into said optical cable; and

[said light emitting section comprises] a second converging lens [for converging] to converge an optical signal transmitted through said optical cable and [sending] transmit the optical signal to said [apparatus] one of said apparatuses.

18. (ONCE AMENDED) An optical communication unit according to claim 14[;], wherein said light receiving section has a first modulating/demodulating section [for receiving] to receive an optical signal transmitted from said [apparatus, converting] one of said apparatuses and convert the optical signal to an electric signal, and also [for demodulating] to demodulate said electric signal to [light] an optical signal and [sending] transmit the optical signal into said optical cable; and

said light emitting section has a second modulating/demodulating section [for receiving] to receive the optical signal transferred through said optical cable and [converting] to convert the optical signal to an electric signal, and also [for demodulating] to demodulate said electric signal to an optical signal and [transmitting] transmit the optical signal to said [apparatus] one of said apparatuses.

19. (ONCE AMENDED) An optical communication unit according to claim [17; wherein said light receiving section and said light emitting section are covered with a same lens] 14, further comprising:

a converging lens arranged in light paths of the optical signal from said one of said apparatuses to said light receiving section and the optical signal from said light emitting section to said one of said apparatuses.

20. (ONCE AMENDED) An optical communication unit according to claim 14[;], wherein said light receiving section has a circuit [changing] that changes an available area thereof according to a communication speed of an optical signal.

21. (ONCE AMENDED) An optical communication unit according to claim 14[;], wherein said light receiving section has a circuit [changing] that changes an available area thereof according to a transmission distance of an optical signal.

22. (ONCE AMENDED) An optical communication unit according to claim 14[;], further comprising:

a converging lens arranged in light paths of the optical signal from said one of said apparatuses to said light receiving section and the optical signal from said light emitting section to said one of said apparatuses,

wherein said light receiving section and said light emitting section are integrated to each other[, and at the same time are covered with a piece of converging lens].

23. (ONCE AMENDED) An optical communication unit according to claim 14[;], wherein said light receiving section and said light emitting section [comprises a signal converging lens for converging an optical signal from said apparatus as well as from said optical cable] are realized with one lens.

Please ADD the following NEW claim:

24. (NEW) An optical communication unit provided in an apparatus and having a light transceiver section to transmit/receive an optical signal to and from the apparatus for executing communication with a communication device, the optical communication unit comprising:

a frame to house the light transceiver section;

a first converging lens attached to the frame, to converge the optical signal transmitted by the light transceiver section and to transmit the converged optical signal to the apparatus; and

a second converging lens attached to the frame, to converge the optical signal transmitted by the apparatus and to transmit the converged optical signal to the light transceiver section.